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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,354	07/14/2005	Mitsuru Naito	OGW-0375	2703

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EXAMINER
KOTTER, KIP T

ART UNIT	PAPER NUMBER
3617	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,354	NAITO ET AL.	
	Examiner	Art Unit	
	KIP T. KOTTER	3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6,7,10-14,17,18 and 21-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,10-14,17,18 and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-3, 12-14 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivin (U.S. Patent No. 5891278; newly cited) in view of Glinz et al. (U.S. Patent No. 6463976 B1; previously cited), Akiyoshi et al. (U.S. Patent No. 6648421 B1; previously cited) and Osada et al. (U.S. Patent No. 4216810; previously cited).

Regarding claims 1, 3, 12 and 14, Rivin discloses a tire/wheel assembly comprising: a wheel having a rim **12**; a pneumatic tire **11** mounted on the rim of the

wheel, the pneumatic tire having a cavity as shown in Fig. 3; and a noise reduction interior member **13** having an annular body disposed in the cavity of the pneumatic tire that is not adapted to support the wheel when the tire is punctured.

Rivin, however, fails to expressly disclose the noise reduction interior member having left and right elastic rings fitted to the rim and attached to the annular body, the annular body being formed by joining a plurality of annular body pieces into which the annular body is divided in a circumferential direction thereof, and the annular body having a cross-sectional shape that varies in the tire circumferential direction such that an annular cavity portion surrounded by the noise reduction interior member and the pneumatic tire has a cross-section area that varies periodically in a circumferential direction of the tire.

Glinz et al. teaches a tire/wheel assembly wherein the noise reduction interior member has left and right elastic rings **4**, **5** fitted to the rim and an annular body **3** attached between the elastic rings to facilitate mounting of the tire with a noise reduction interior member on the rim as described in column 2, lines 15-67.

It would have been obvious to one having ordinary skill in the art to have modified the noise reduction interior member of Rivin by attaching the annular body between left and right elastic rings that are fitted on the rim, such as taught by Glinz et al., to obtain the predictable result of facilitating the mounting of the tire and noise reduction member on the rim.

Osada et al. teaches a tire/wheel assembly wherein the annular body **Fp** is comprised of a plurality of annular body pieces **14** in a circumferential direction as shown in Fig. 2 to facilitate assembly as described in column 4, lines 32-38.

It would have been obvious to a person having ordinary skill in the art to have substituted an annular body made of a plurality of annular body pieces, such as taught by Osada et al., for the annular body of Rivin to obtain the predictable result of facilitating its assembly.

Akiyoshi et al. teaches a tire/wheel assembly wherein the annular body **30** has a cross-sectional shape that varies in the tire circumferential direction such that the annular cavity portion surrounded by the noise reduction interior member and the pneumatic tire has a cross-section area that varies periodically in a circumferential direction of the tire as shown in Fig. 6 and described in column 4, lines 54-65.

It would have been obvious to a person having ordinary skill in the art to have modified the annular band of Rivin so that it has a cross-sectional shape that varies in the tire circumferential direction such that the annular cavity portion has a cross-section area that varies periodically in a circumferential direction of the tire, such as taught by Akiyoshi et al., to reduce noise caused by columnar resonance.

Regarding claims 2 and 13, Akiyoshi et al. further teaches a tire/wheel assembly wherein the cross-sectional area of the annular cavity portion varies such that the maximum cross-sectional area is 2% greater or more than a minimum cross-sectional area thereof as described in column 6, lines 13-26.

From this teaching, it would have been obvious to a person having ordinary skill in the art to have modified Rivin, as modified by Glinz et al., Osada et al. and Akiyoshi et al., so that the cross-sectional area of the annular cavity portion varies such that the

maximum cross-sectional area is 2% greater or more than a minimum cross-sectional area thereof to obtain a larger noise reducing effect.

Regarding claims 23-26, Osada et al. further teaches a tire/wheel assembly wherein the annular body **Fp** is comprised of four equally sectioned regions **14** in a circumferential direction wherein each equally sectioned region comprises a single annular body piece as shown in Fig. 2 to facilitate assembly as described in column 4, lines 32-38.

It would have been obvious to a person having ordinary skill in the art to have substituted an annular body made of four equally sectioned regions such as taught by Osada et al., for the annular body of Rivin, as modified by Glinz et al., Osada et al. and Akiyoshi et al., to obtain the predictable benefit of facilitating its assembly.

Akiyoshi et al. further teaches a tire/wheel assembly wherein the cross-sectional area of the annular cavity portion is a maximum at either two or four sectioned regions and the cross-sectional area of the annular cavity portion is a minimum at either two or four sectioned regions that include a bulkhead **15**, **15'**, **15''** and wherein the minimum and maximum regions are alternately arranged to reduce noise caused by columnar resonance as described in column 6, lines 3-26 and best shown Figs. 3, 8 and 9A.

It would have been obvious to a person having ordinary skill in the art to have modified the annular body of Rivin, as modified by Glinz et al., Osada et al. and Akiyoshi et al., so that annular cavity portion has two regions with a maximum cross-sectional area and two regions with a minimum cross-sectional area, wherein the maximum cross-sectional area regions and minimum cross-sectional area regions are

alternately arranged, such as taught by Akiyoshi et al., to obtain the predictable result of reduced noise caused by columnar resonance.

4. Claims 6, 7, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glinz et al. in view of Osada et al. and Flament at al. (U.S. Patent No. 6516849 B2; previously cited).

Regarding claims 6 and 10, Glinz et al. discloses a tire/wheel assembly comprising: a wheel **1** having a rim **15**; a pneumatic tire mounted on the rim of the wheel, the pneumatic tire having a cavity; and a noise reduction interior member **2** disposed in the cavity of the pneumatic tire in such a manner that the noise reduction interior member divides the cavity of the pneumatic tire into an inner cavity part and an outer cavity part as shown in Fig. 1, and the noise reduction interior member having left and right elastic rings **4**, **5** fitted to the rim and an annular body attached between the elastic rings.

Glinz et al., however, fails to expressly disclose the annular body having a plurality of openings through which the inner cavity part and outer cavity part are communicatingly connected, the annular body consisting of four equally sectioned regions in a circumferential direction thereof wherein the four equally sectioned regions consist of two first regions having openings that are maximum in total opening area and two second regions having openings that are minimum in total opening area, the first and second regions being alternately placed, and the plurality of openings being unevenly distributed in such a manner that the regions have openings which are different in total opening area and wherein the openings have opening lengths of 3 mm to 6 mm.

Osada et al. teaches a tire/wheel assembly wherein the annular body **Fp** consists of four equally sectioned regions **14** in a circumferential direction as shown in Fig. 2 to facilitate assembly as described in column 4, lines 32-38.

It would have been obvious to a person having ordinary skill in the art to have substituted an annular body made of four equally sectioned regions, such as taught by Osada et al., for the non-closed slot ring annular body of Glinz et al, to obtain the predictable result of facilitating its assembly.

Flament et al. teaches a tire/wheel assembly wherein the annular body has a plurality of openings **15** through which the inner cavity part and outer cavity part are communicatingly connected, the annular body having regions **11** equally sectioned in a circumferential direction thereof, the plurality of openings being unevenly distributed in such a manner that the regions have openings which are different in total opening area as shown in Fig. 8-b and openings with opening lengths of 3 mm to 6 mm as described in column 5, lines 9-11 to provide Helmholtz-type resonators for attenuating different frequencies of resonances.

It would have been obvious to a person having ordinary skill in the art to have modified the annular body of Glinz et al., as modified by Osada et al., so that it includes a plurality of openings, wherein the openings have lengths of 3 mm to 6 mm and are unevenly distributed so that the regions have openings which are different in total opening area, such as taught by Flament et al, to provide the predictable result of Helmholtz-type resonators for attenuating different frequencies of resonances.

Flament et al. further teaches that the dimensions and positions of the openings can vary as desired to attenuate different frequencies of resonances which each appear at

a distinct speed of rotation as described in line 61 of column 5 through line 11 of column 6. Moreover, Flament et al. teaches having different resonators each acting at different frequencies or pairs or sets of resonators if so desired as described in lines 41-44 of column 7.

From these teachings, it would have been obvious to a person having ordinary skill in the art to have alternately placed the regions having maximum total opening area and the regions having minimum total opening area so that the resonators are tuned to the frequency or range of frequencies on which they are desired to act so as to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

Regarding claim 7, it would have been obvious to a person having ordinary skill in the art, as a mechanical expedient, to have modified the regions so that the region having openings that are maximum be 5% to 10% greater in total opening area than the region having openings that are minimum to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

Regarding claim 11, it would have been obvious to a person having ordinary skill in the art, as a mechanical expedient, to have modified the annular body so that the entire opening area of all the openings on the outer surface is between 0.3% to 6.0% of the total outer surface area of the annular body to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

5. Claims 17, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivin in view of Glinz et al., Osada et al. and Flament et al.

Regarding claims 17 and 21, Rivin discloses a tire/wheel assembly comprising: a wheel having a rim **12**; a pneumatic tire **11** mounted on the rim of the wheel, the pneumatic tire having a cavity as shown in Fig. 3; and a noise reduction interior member **13** having an annular body disposed in the cavity of the pneumatic tire that is not adapted to support the wheel when the tire is punctured.

Rivin, however, fails to expressly disclose the noise reduction interior member having left and right elastic rings fitted to the rim and attached to the annular body, the annular body consisting of four equally sectioned regions in a circumferential direction thereof wherein the four equally sectioned regions consist of two first regions having openings that are maximum in total opening area and two second regions having openings that are minimum in total opening area, the first and second regions being alternately placed, and the plurality of openings being unevenly distributed in such a manner that the regions have openings which are different in total opening area and wherein the openings have opening lengths of 3 mm to 6 mm.

Glinz et al. teaches a tire/wheel assembly wherein the noise reduction interior member has left and right elastic rings **4**, **5** fitted to the rim and an annular body **3** attached between the elastic rings to facilitate mounting of the tire with a noise reduction interior member on the rim as described in column 2, lines 15-67.

It would have been obvious to one having ordinary skill in the art to have modified the noise reduction interior member of Rivin by attaching the annular body between left and right elastic rings that are fitted on the rim, such as taught by Glinz et

al., to obtain the predictable result of facilitating the mounting of the tire and noise reduction member on the rim.

Osada et al. teaches a tire/wheel assembly wherein the annular body **Fp** consists of four equally sectioned regions **14** in a circumferential direction as shown in Fig. 2 to facilitate assembly as described in column 4, lines 32-38.

It would have been obvious to a person having ordinary skill in the art to have substituted an annular body made of four equally sectioned regions, such as taught by Osada et al., for the non-closed slot ring annular body of Rivin, as modified by Glinz et al, to obtain the predictable result of facilitating its assembly.

Flament et al. teaches a tire/wheel assembly wherein the annular body has a plurality of openings **15** through which the inner cavity part and outer cavity part are communicatingly connected, the annular body having regions **11** equally sectioned in a circumferential direction thereof, the plurality of openings being unevenly distributed in such a manner that the regions have openings which are different in total opening area as shown in Fig. 8-b and openings with opening lengths of 3 mm to 6 mm as described in column 5, lines 9-11 to provide Helmholtz-type resonators for attenuating different frequencies of resonances.

It would have been obvious to a person having ordinary skill in the art to have modified the annular body of Rivin as modified by Glinz et al. and Osada et al., so that it includes a plurality of openings, wherein the openings have lengths of 3 mm to 6 mm and are unevenly distributed so that the regions have openings which are different in total opening area, such as taught by Flament et al, to provide the predictable result of Helmholtz-type resonators for attenuating different frequencies of resonances.

Flament et al. further teaches that the dimensions and positions of the openings can vary as desired to attenuate different frequencies of resonances which each appear at a distinct speed of rotation as described in line 61 of column 5 through line 11 of column 6. Moreover, Flament et al. teaches having different resonators each acting at different frequencies or pairs or sets of resonators if so desired as described in lines 41-44 of column 7.

From these teachings, it would have been obvious to a person having ordinary skill in the art to have alternately placed the regions having maximum total opening area and the regions having minimum total opening area so that the resonators are tuned to the frequency or range of frequencies on which they are desired to act so as to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

Regarding claim 18, it would have been obvious to a person having ordinary skill in the art, as a mechanical expedient, to have modified the regions so that the region having openings that are maximum be 5% to 10% greater in total opening area than the region having openings that are minimum to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

Regarding claim 22, it would have been obvious to a person having ordinary skill in the art, as a mechanical expedient, to have modified the annular body so that the entire opening area of all the openings on the outer surface is between 0.3% to 6.0% of the total outer surface area of the annular body to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

Response to Arguments

6. Applicants' arguments filed January 22, 2008 have been fully considered but they are not persuasive.

In response to Applicants' argument that "[t]he band 30 in Fig. 6 of Akiyoshi et al. '421 changes the cross-sectional area of the cavity portion, but the band 30 itself does not appear to change in cross-sectional shape", note that Akiyoshi et al. describes the band 30 as having a "continuous irregular shape in side elevation" and "[o]wing to this band **30**, a cross-sectional shape of a closed space **28** is varied in the circumferential direction" (see lines 58-65 of column 4). As such, it is unclear as to what Applicant is attempting to argue.

In response to Applicants' argument that the shape of the run-flat support of Osada et al. could not be changed, note that Osada et al. was used solely as a teaching reference to teach an annular body formed of a plurality of pieces under §103(a).

In response to Applicants' argument that there is no suggestion of "a tire/wheel assembly being equally sectioned into four regions with two regions having a maximum total opening area and the other two regions having a minimum total opening area", note paragraphs 4 and 5 above. Specifically, Osada et al. provides the teaching of sectioning the annular band into four regions to facilitate assembly and Flament et al. teaches that the dimensions and positions of the openings can vary as desired to attenuate different frequencies of resonances which each appear at a distinct speed of rotation as described in line 61 of column 5 through line 11 of column 6. Moreover, Flament et al. teaches

having different resonators each acting at different frequencies or pairs or sets of resonators if so desired as described in lines 41-44 of column 7.

From these teachings, it would have been obvious to a person having ordinary skill in the art to have alternately placed the regions having maximum total opening area and the regions having minimum total opening area so that the resonators are tuned to the frequency or range of frequencies on which they are desired to act so as to optimize the effectiveness of the Helmholtz-type resonators in dissipating vibrational energy.

In response to Applicants' argument that the annular body of Osada et al. differs from Applicants' annular body, note again that Osada et al. is only being used as a teaching reference to teach an annular body having four equally sectioned regions, wherein each equally sectioned region comprises a single annular body piece. As noted above in paragraph 3, Akiyoshi et al. provides the teaching of an annular cavity portion having two regions with a maximum cross-sectional area and two regions with a minimum cross-sectional area, wherein the maximum cross-sectional area regions and minimum cross-sectional area regions are alternately arranged to reduce noise caused by columnar resonance as described in column 6, lines 3-26 and best shown Figs. 3, 8 and 9A.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIP T. KOTTER whose telephone number is (571)272-7953. The examiner can normally be reached on 9:00-4:00pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samuel J. Morano can be reached on (571)272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T. K./
Examiner, Art Unit 3617

/Russell D. Stormer/

Primary Examiner, Art Unit 3617